take place. This point is emphasized by Weismann as against Kölliker; but we conceive the principal point at issue between the two thinkers lies in their conception of the relation of cell division to differentiation. To Weismann ontogeny is an analysis, due to inherent mechanical arrangements in the protoplasm. To Kölliker, ontogenetic differentiation, like phylogenetic differentiation, is dependent on external conditions. Kölliker does not push his theory to logical conclusions. He might say: If one of the conjugating pronuclei could be replaced by a nucleus from a brain cell or a liver cell for example, there would be no radical dislocation in the embryonic development. This position appears scientifically defensible; and we could add a second scholium, viz.: That in this experiment any fragment of a nucleus taken without definite shape or size, would do just as well, because the nucleus appears to be an aggregate of a vast number of similar gemmules. But the most important question of heredity, viz., How are the new characters acquired by the germ plasm? is still unanswered. Weismann emphatically disbelieves that acquired characters can be transmitted, or that the germ cell receives anything except food from the body. He is forced to the conclusion, that the germ plasm must vary indefinitely, and that adaptation is due to natural selection simply. It seems to be rash to deny that the body has a definite action on the germ cells. The researches of Gaule and his pupils tend to show that something more vital than food wanders from cell to cell. In this line we have to await further developments. Gaule believes that gemmules make the circuit of the tissues to finally lodge in the reproductive organs. The following author dwells on this aspect of the problem.

Ueber Vererbung. NUSSBAUM. Bonn, 1888.

Nussbaum seems to mediate between the positions of Weismann and Kölliker. He admits that like can produce only like, but germinal matter is probably more widely spread than Weismann believes. In the protozoa, Weismann has admitted that the environment causes characters to be acquired that are transmitted, because here is asexual reproduction by division. But we have seen that the nucleus governs the formation of structures in *stentor*, etc., hence the environment must first affect the nucleus, and we naturally conclude that as the germ cell has the power to produce a soma for its own nutrition, that the same soma is an instrument of mediation between the environment and the germ cell. The fact that the character of the father of the first offspring affects the subsequent offspring of the same mother, but by a different father, (ignored by many theories of heredity) shows that sexual cells are capable of marked and definite modification. In this connection we may mention Sequard's experiments upon rabbits. By artificially produced lesions of the cord, epilepsy was caused; and the offspring of such epileptic rabbits suffered from congenital epilepsy.

Ueber die Vererbung. WEISMANN. Jena, 1883.

By Weismann we are reminded that no disease is inherited, but only the tendency to diseases; this is only a particular statement of a more universal law, that our characters are the particular modes of reaction the body has taken with reference to particular circumstances, and thus the particular form of our features only partially represents our hereditary or idioplasmic characteristics. Epilepsy is not a good disease to experiment with, because it may be caused by a certain weakness of nervous organization due to general malnutrition of the embryo caused by epilepsy (or the nervous disturbance of which epilepsy was the symptom) in the mother. The experiment should be repeated, on the males only, to be valid. Weismann does not hesitate to declare that